

CLAIMS

5 1. Apparatus (1; 20; 34) for storing at least one sequence of information (2), said information being formed of a succession of information items (ti, tj) in which an artistic or rational link is considered to exist between at least some pairs of adjacent items in said succession, comprising :

- 10 - input means (11) for receiving said sequence of information (2), and
- storage means (10;32) for storing said information;

characterised in that it further comprises segmentation means (6) for segmenting said sequence of information (2) into individually accessible segments (seg.1-seg.n) each corresponding to a respective information item (ti, tj), in response to segmentation data (4) indicating end limits of said information items;

15 said storage means (10;32) being accessible to output said segments in a sequence corresponding to said succession of information items (ti, tj).

20 2. Apparatus according to claim 1, wherein said received sequence of information is in the form of a data stream (2), said segmentation means (6) being responsive to time information in said segmentation data (4) indicating times of occurrence of said end limits of said information items (ti, tj) for cutting up said stream automatically to extract said segments (seg.1-seg.n) therefrom.

25 3. Apparatus according to claim 1 or 2, wherein said segmentation means (6) is adapted to receive segmentation data (4) through a second input (I2) separate from said information (2) to be stored.

30 4. Apparatus according to claim 3, wherein said segmentations means (6) is adapted to extract said segmentation data (4) from a website associated to a source of said sequence of information.

35 5. Apparatus according to claim 1 or 2, wherein said segmentation means (6) is adapted to extract said segmentation data (4) from said sequence of information.

6. Apparatus according to any one of claims 1 to 5, wherein said input means (I1) is adapted to receive said sequence of information (2) in the form audio data, and wherein said segmentation means (6) is operative to form segments (seg.1-seg.n) each corresponding to a music title in said sequence of information.

7. Apparatus according to claim 6, wherein said input means (I1) is adapted to receive said audio data (2) from a radio station sending a sequence of music titles in accordance with a music programme.

8. Apparatus according to claim 6, wherein said input means (I1) is adapted to receive said audio data (2) from music compilations selected and entered by a user.

9. Apparatus according to claim 8, wherein said music compilation is in the form of a command to download from a server selected music titles in an order corresponding to a selected succession.

10. Apparatus according to any one of claims 1 to 9, further comprising:

- identification means (26) connectable to a source of identification data identifying information items in said sequence of information (2), said identification means extracting at least some of said identification data to form an identifier (id.1-id.n), and

- combining means (28) for combining with a given segment (seg.i) an identifier (id.i) corresponding thereto,

- said storage means (32) further being arranged to store said identifier in association with said segment.

11. Apparatus according to claim 10, wherein said identifier (id.1-id.n) includes data indicative of an attribute under which respective groups of said segments (seg.1-seg.n) can be generically identified and classed.

12. Apparatus according to claim 6 and 11, wherein said attribute corresponds to at least one type under which a music title can be classed (e.g. Rock, Jazz, Light Classical, ...).

13. Apparatus according to claim 12, wherein said identifier (id.1-id.n) includes artist data indicative of an artist associated with the corresponding music title, and said apparatus further comprises means (74, 76) for deriving at least one said type on the basis of said artist data.

14. Apparatus according to any one of claims 1 to 13, further comprising similarity analysing means (44, 44-1) for producing automatically similarity relations between stored segments (seg.1-seg.n) in terms of their closeness in said sequence of stored segments.

15. Apparatus according to claim 14, wherein said similarity analysing means (44, 44-1, 46) produces said similarity relations by producing, for each segment (seg.i) corresponding to an information item considered (ti) in a given stored sequence, a similarity relation graph expressing a distance D (ti, tj) between that information item and other stored information items.

16. Apparatus according to claim 15, wherein said similarity relation graph contains, for each said other information item (tj), a closeness value determined between pairs formed by said information item considered (ti) and said other information item (tj).

17. Apparatus according to any one of claims 14 to 16, wherein said analysing means (44, 44-1) is arranged to calculate said closeness value for said information item considered (ti) by attributing a first closeness value each time said other information item (tj) appears just before or just after in said sequence,

said first values being cumulated over said sequence to yield a cumulated value indicating the closeness of said pair of information items (ti, tj).

18. Apparatus according to claim 17, wherein said analysing means (44, 44-1) is further arranged to attribute a second closeness value, smaller than said first closeness value, each time said other information item (tj) is separated from said information considered (ti) by m separating information items, where m is an upper bounded number,

said first and second values being cumulated over said sequence to yield a cumulated value indicating the closeness said pair of information items (ti, tj).

19. Apparatus according to claim 18, wherein said number m of separating information items is equal to one.

5 20. Apparatus according to any one of claims 1 to 19, wherein said apparatus further comprises music programme generating means (48, 50) for building a sequence of information items from said stored segments (seg.1-seg.n).

10 21. Apparatus according to claim 20, wherein said programme generating apparatus (48, 50) is operative to build said sequence of information items in response to user tastes expressed through user inputs (54, 56, 58).

15 22. Apparatus according to claim 20 or 21, wherein said programme generating apparatus (48, 50) is operative to build said sequence of information items in response to said similarity relations according to any one of claims 14 to 19, in which information items are concatenated taking their closeness into account.

20 23. Apparatus according to claim 21, wherein said programme generating means (48, 50) is responsive to a user input (56) expressing a like or dislike, associated to at least some information items in said succession of information items, to create a sequence of information items in which said disliked information items tend to be removed and liked information items are emphasised.

25 24. Apparatus according to claims 22 and 23, wherein said programme generating means (48, 50) is further responsive to said similarity relations to create a sequence of information items in which information items close to disliked information items are de-emphasised and/or in which information items close to liked information items are emphasised.

30 25. Apparatus according to any one of claims 20 to 24, wherein said programme generating means (48, 50) is responsive to a selected attribute (e.g. type of music) of said information items, according to any one of claims 11 or 12, said selected attribute being entered through a corresponding user input (54), to create a sequence of information items containing at least a preponderance of information items falling under said selected attribute.

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26. Apparatus according to claim 25, wherein said programme generating means (48, 50) is arranged to create a sequence of information items taking into account said selected attributes associated to said information items, and wherein said programme generating means is further responsive to a discovery parameter entered through a user input (58) expressing a degree of accepted departure from said at least a preponderance of information items falling under said selected attribute, whereby said discovery parameter can be set to a first value in which said preponderance is maximal, possibly total, and to a second value, in which said sequence also contains a certain proportion P of information items not falling under said selected attribute.

27. Apparatus according to claim 26, wherein said proportion P can take on a range of values through said corresponding user input (58).

28. Apparatus according to claim 26 or 27, wherein said programme generating means (48, 50) is further responsive to said similarity relation relations according to any one of claims 14 to 19, such that a said information item not falling under a said selected attribute (e.g. type of music) is entered in said created sequence if and where it has a predetermined degree of closeness, as determined by said similarity relations, with an adjacent information item of said sequence.

29. Apparatus according to any one claims 20 to 28, wherein said programme generating means (48, 50) comprises means for labelling and storing said created sequences as objects which can be selectively exported outside said apparatus.

30. Apparatus according to any one claims 1 to 29, further comprising means for importing said created sequences.

31. Apparatus according to any one of claims 1 to 30 connected to playback means for receiving said segments of a selected created sequence and expressing the data contained therein in a form intelligible to a user (e.g. music, images, etc.).

32. Use of the apparatus according to any one of claims 1 to 31 for producing at least one taste, said taste being a user taste comprised of a sequence of information

items produced by taking account feedback from said user, or a generic taste comprised of a sequence.

5 33. Method of storing at least one sequence of information (2), said information being formed of a succession of information items (ti, tj) in which an artistic or rational link is considered to exist between at least some pairs of adjacent items in said succession, comprising the steps of :

- receiving (11) said sequence of information (2), and
- storing said information (10;32);

10 characterised in that it further comprises the steps of segmenting (6) said sequence of information (2) into individually accessible segments (seg.1-seg.n) each corresponding to a respective information item (ti, tj), in response to segmentation data (4) indicating end limits of said information items;

15 said stored segments being accessible for outputting said segments in a sequence corresponding to said succession of information items (ti, tj).

20 34. Method according to claim 33, wherein said received sequence of information is in the form of a data stream (2), said segmentation (6) being performed in response to time information in said segmentation data (4) indicating times of occurrence of said end limits of said information items (ti, tj) for cutting up said stream automatically to extract said segments (seg.1-seg.n) therefrom.

25 35. Method according to claim 3, wherein said segmentation data (4) is extracted from a website associated to a source of said sequence of information (2).

36. Method according to claim 33 or 34, wherein said segmentation data (4) is extracted from said sequence of information.

30 37. Method according to any one of claims 33 to 36, wherein said sequence of information (2) is received in the form audio data, and wherein said segmentation (6) serves to form segments (seg.1-seg.n) each corresponding to a music title in said sequence of information.

38. Method according to claim 37, wherein said audio data (2) is received from a radio station sending a sequence of music titles in accordance with a music programme.

5 39. Method according to any one of claims 33 to 38, further comprising the steps of:

- identifying (26) from a source of identification data identifying information items in said sequence of information (2), said identification step extracting at least some of said identification data to form an identifier (id.1-id.n), and
- 10 - combining (28) for with a given segment (seg.i) an identifier (id.i) corresponding thereto,
said identifier being stored (32) in association with said segment.

15 40. Method according to claim 39, wherein said identifier (id.1-id.n) includes data indicative of an attribute under which respective groups of said segments (seg.1-seg.n) can be generically identified and classed.

20 41. Method according to claim 37 and 40, wherein said attribute corresponds to at least one type under which a music title can be classed (e.g. Rock, Jazz, Light Classical, ...).

25 42. Method according to claim 41, wherein said identifier (id.1-id.n) includes artist data indicative of an artist associated with the corresponding music title, and said method further comprises deriving (74, 76) at least one said type on the basis of said artist data.

30 43. Method according to any one of claims 33 to 42, further comprising the steps (44, 44-1) of producing automatically similarity relations between stored segments (seg.1-seg.n) in terms of their closeness in said sequence of stored segments.

35 44. Method according to claim 43, wherein said similarity analysing step (44, 44-1, 46) produces said similarity relations by producing, for each segment (seg.i) corresponding to an information item considered (ti) in a given stored sequence, a similarity relation graph expressing a distance D (ti, tj) between that information item and other stored information items.

45. Method according to claim 44, wherein said similarity relation graph contains, for each said other information item (tj), a closeness value determined between pairs formed by said information item considered (ti) and said other information item (tj).

46. Apparatus according to any one of claims 43 to 45, wherein said analysing step (44, 44-1) involves calculating said closeness value for said information item considered (ti) by attributing a first closeness value each time said other information item (tj) appears just before or just after in said sequence,

said first values being cumulated over said sequence to yield a cumulated value indicating the closeness of said pair of information items (ti, tj).

47. Apparatus according to claim 46, wherein said analysing step (44, 44-1) is further carried out to attribute a second closeness value, smaller than said first closeness value, each time said other information item (tj) is separated from said information considered (ti) by m separating information items, where m is an upper bounded number,

said first and second values being cumulated over said sequence to yield a cumulated value indicating the closeness said pair of information items (ti, tj).

48. Method according to any one of claims 33 to 47, further comprising the step of generating (48, 50) music programme generating by building a sequence of information items from said stored segments (seg.1-seg.n).

49. Method according to claim 48, wherein said programme generating step (48, 50) is involves building said sequence of information items in response to user tastes expressed through user inputs (54, 56, 58).

50. Method according to claim 48 or 49, wherein said programme generating step (48, 50) involves building said sequence of information items in response to said similarity relations according to any one of claims 43 to 47, in which information items are concatenated taking their closeness into account.

51. Method according to claim 49, wherein said programme generating step (48, 50) is carried out taking into account a user input (56) expressing a like or dislike, associated to at least some information items in said succession of information items, to create a sequence of information items in which said disliked information items tend to be removed and liked information items are emphasised.

52. Method according to claim 50 or 51, wherein said programme generating means (48, 50) is further carried out taking into account said similarity relations to create a sequence of information items in which information items close to disliked information items are de-emphasised and/or in which information items close to liked information items are emphasised.

53. Method according to any one of claims 49 to 52, wherein said programme generating step (48, 50) is carried out to take account of a selected attribute (e.g. type of music) of said information items, according to claim 41 or 42, said selected attribute being entered through a corresponding user input (54), to create a sequence of information items containing at least a preponderance of information items falling under said selected attribute.

54. Method according to claim 53, wherein said programme generating step (48, 50) is carried out to create a sequence of information items taking into account said selected attributes associated to said information items, and wherein said programme generating step is further carried out to take into account a discovery parameter entered through a user input (58) expressing a degree of accepted departure from said at least a preponderance of information items falling under said selected attribute, whereby said discovery parameter can be set to a first value in which said preponderance is maximal, possibly total, and to a second value, in which said sequence also contains a certain proportion P of information items not falling under said selected attribute.

55. Method according to claim 54, wherein said programme generating step (48, 50) is further carried out taking into account said similarity relation relations according to any one of claims 43 to 47, such that a said information item not falling under a said selected attribute (e.g. type of music) is entered in said created sequence

if and where it has a predetermined degree of closeness, as determined by said similarity relations, with an adjacent information item of said sequence.

5 56. Method according to any one claims 49 to 55, wherein said programme generating step (48, 50) involves labelling and storing said created sequences as objects which can be selectively exported.

57. Method according to any one claims 33 to 56, further comprising the step of importing said created sequences.

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